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The Complexities of Comparative Advantages

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Currently, "globalisation" and its effects are again being debated with emotions running high. This makes sense because there are not many factors which have transformed the globe more profoundly than the progress of international economic dependency in its various forms (trade, free movement of capital, the growing importance of transnational firms, etc.). This paper concentrates upon trade.

Since the days of Adam Smith and David Ricardo, most economists have argued that international trade is basically beneficial for all parts involved. However, various "heterodox" thinkers such as Friedrich List, Raul Prebish, Gunnar Myrdal, or more recently Paul Krugman, have argued that free trade can produce negative consequences, in particular for the weaker partners. Even Paul A. Samuelsen, who for decades has used his formidable formal skills to demonstrate the benign effects of free trade, has turned very pessimistic as to this point[1]. In this paper, we do not follow the ramifications of that debate, basically we stick to the model of Comparative Advantages, developed around 1815. At closer look, this model is not just a fanfare for unconditional free traders (as it is often presented). Although it does indeed support the opinion that free trade is beneficial for both partners in many cases, the implications of this model also show that free trade can produce negative results in many other cases. We try to specify the conditions under which this can happen.

Adam Smith and the Advantages of an International Division of Labour

The perhaps strongest argument in favour of free international trade is based upon the assumption that an international division of labour increases the wealth of all partners involved, and that free trade leads to exactly this division of labour. This line of

argumentation was formulated in a consistent form presumably the first time by Henry Martyn in his *Considerations upon the East India Trade* (1701), a pamphlet in which he attacked the monopoly of the East India Company. [2] The argument gained enormous influence when taken up by Adam Smith some 70 years later. Smith identified the refinement of the division of labour as the most important source of wealth at all. Consequently, an extension of the division of labour which exists inside a country, to an international division of labour, generates even more wealth. The very opening sentence of Smith's *Wealth of Nations* (1776) reads: "The greatest improvement in the productive powers of labour ... seem to have been the effects of the division of labour."[3] Division of labour means specialisation. But specialisation requires that a person who specialises on, let's say, shoe production, can exchange shoes for e.g. bread. From this Smith concluded that the *extent* of the market plays a decisive role. In his own words: "As it is the power of exchanging, that gives occasion to the division of labour, so the extent of this division must always be limited by the extent of ... the market. When the market is very small, no person can have any encouragement to dedicate himself entirely to one employment, for want of power to exchange all that surplus part of the produce of his own labour, which is over and above his consumption, for such parts of the produce of other men's labour as he has occasion for.

There are some sorts of industry ... which can be carried on nowhere but in a great town ... As by means of water-carriage a more extensive market is opened to every sort of industry than what land-carriage alone can afford it, so it is upon the sea-coast, and along the banks of navigable rivers, that industry of every kind naturally begins to subdivide and improve itself ..."[4]

It followed from this approach that every policy which extended the border of markets, and which consequently allowed for more division of labour, also generated more wealth.

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[1] See Randall Hinshaw (ed.), *The World Economy in Transition. What Leading Economists Think*, Cheltenham, UK/Brookfield, US, 1996, p. 8-24.
[2] Douglas A. Irwin, *Against the Tide. An Intellectual History of Free Trade*, Princeton University Press, Princeton, New Jersey, 1996, p. 56-59.
[3] Adam Smith, The Wealth of Nations, Books I-III, With an Introduction by Andrew Skinner, Harmondsworth, Middlesex, England, 1986, p. 109.
[4] Ibid., p. 121f.

This was also valid for any international division of labour. Again in Smith's own words: "If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with the produce of our own industry, employed in a way which we have some advantage."[5] So, Great Britain should concentrate on the production of commodities at which she was good at (at which she had "an advantage"). In modern texts his theory often referred to as a theory of "absolute advantages".

A simple numerical model can illustrate Smith's argument. Let us suppose there are two countries, we name them "Great Britain" and "France". For the sake of simplicity, we suppose that both countries produce only two commodities, coal and hats, and both countries have a work force of two labourers. These assumptions grossly simplify reality, of course. The argument holds, however, also if we enlarge the model to many countries, to many more commodities, and to many more people involved. But such an enlargement would only make the formal argumentation much more complex, without adding substance to it, so, at this point, we can stick to the simple version.

One further assumption is crucial: We assume the respective productivities to be different: In "France", one worker can produce 5 hats pr day, but he can only mine 1 sack of coal. The French are simply better at making hats than coal mining. With the British, the matter is reversed: One worker can produce 5 sack of coals per day, but only 1 hat. The figures are, of course, arbitrary, they shall illustrate a line of reasoning, they do not depict a historical situation.

[5] As quoted in Douglas A. Irwin, *Against the Tide. An Intellectual History of Free Trade*, Princeton University Press, Princeton, New Jersey, 1996, p.79.

If we additionally assume that each country employs one worker at the production of each commodity, the following matrix of production appears:

	Coal	Hats
Great Britain	5	1
France	1	5

Table 1: The pattern of production in "Great Britain" and "France", before trade and international specialisation, assuming two workers per country, and productivity (measured in production units per day) as indicated.

If there is no foreign trade, the two countries can only consume what they produce themselves: The British can heat with 5 sacks of coal, but they have only 1 hat; the French can allow themselves to follow fashion, they have got 5 hats. But they have to be content with only 1 sack of coal. Given the country's fortunate climatic conditions, this is perhaps not so grave.

This pattern of production and consumption is, however, according to Smith and other liberal economists, not advisable. They would recommend that Great Britain should concentrate upon coal, and France on hats. Thereafter they can exchange their products, and both countries will be much off than before.

If we translate that recommendation into the numerical model and make both countries engage their two workers in the production of only one commodity per country, the following production matrix appears (both countries employing both their labourers in one commodity):

	Coal	Hats
Great Britain	10	-
France	-	10

Table 2: Production after specialisation, both countries concentrating their work force (2 labourers) on one commodity each.

This specialisation opens the possibility for trade. Great Britain can export 5 sacks of coal to France and import 5 hats from there. This creates a consumption pattern, which differs profoundly from the production: The British have brought 10 sacks of coal to the surface, but they can use only 5 of them because they have exported the other half to France. On the other hand, having produced no hat so what ever, they can wear 5 of them nevertheless. The French are in a similar position: They have produced 10 hats, but 5 of them they sold to the British. On the other hand, although the French have mined no coal, they do not have to freeze; they have imported British coal. In matrix form, the following consumption pattern appears:

	Coal	Hats
Great Britain	5	5
France	5	5

Table 3: The consumption after specialisation and trade.

Let us compare this consumption pattern with table 1, where we depicted the situation without trade, where both countries produced both commodities.

	Coal	Hats
Great Britain	+/- 0	+ 4
France	+ 4	+/- 0

Table 4: The gains of specialisation and trade.

As we can see, both countries have improved their situation dramatically. There are high gains (hats for Britain, coal for France), and on no field there are losses.

It must, however, be underlined that the calculations above rest on the assumption that "Great Britain" and "Franc" are more or less equally productive. As regards countries which have reached more or less the same level of economic development, there are practically no economists in the world who voice objections against free trade and international division of labour. The matter turns, however, much more complicated (and much more controversial,) as soon as we regard the trade between rich and poor countries (see below, section 3).

The Problems of Dependency

The material gains of an international division of labour do not necessarily imply that it is always and under all circumstances advisable to follow this course. Material gains are not everything.

A high degree of division of labour means also dependency. In the models above, after specialisation neither "Great Britain" nor "France" can exist alone any more. If e.g. "France" cannot deliver hats, the British can't wear any. The loss of "hats" might be acceptable, but what about e.g. grain? It was exactly the question of grain which started one of the sharpest controversies in the history of Political Economy: In 1814-15 the British Parliament introduced a series of new tariffs upon the importation of grain, the so-called Corn Laws. Most economists, following the arguments laid out by Smith, were against these tariffs. But Thomas Robert Malthus, who first won fame with his *Essay on the Principle of Population* (1798) and who afterwards was regarded by many as Smith's true successor, defended the Corn Laws. In his pamphlet *Grounds of an Opinion on the Policy of Restricting the Importation of Foreign Corn* (1815) he argued, among several points, that foreign suppliers such as France had gained a permanent cost advantage in grain. So, gradually, they would drive the British farmers out of the market. This would be very risky for Britain because in cases of e.g. bad harvests the foreign supplier would

restrict their corn exports, and then Britain would end in serious problems[6]. So, Great Britain had to protect her own agricultural sector and, in this case, deviate from the line which Smith has argued for. Malthus' liberal colleagues were unimpressed. From then onwards, Malthus was no longer allowed to publish his views in the influential *Edinburgh Review*.

In practical politics, considerations of economic security (and military security) have, of course, always played a role. One of the reasons why the European Economic Community embarked upon the course of a highly regulated and highly protective agrarian policy was exactly the idea that Western Europe ought to be able to be independent of foreign food imports. In some historical situations arguments of this kind became of an overriding importance. In the 1930s e.g. the Nazis followed a policy of systematic autarchy, as a part of war preparation, in order to be prepared in case of a blockade. At present, no country follows a policy of systematic autarchy, but still no state is prepared to give up e.g. defence technology completely. It follows, however: The more peaceful the general situation is, and the less important arguments of economic security become, the better it is for economic co-operation and division of labour. Wars, Cold Wars included, are destructive and cost much money, even if no shot is fired, because they limit the international division of labour. This argument can also be reversed: If states increase their division of labour, and thereby create mutual dependency, they increase their mutual interest in peace. This was one strong argument for the extension of economic ties between the Western countries and the Soviet Union during the Cold War. Trade can also mean a bit of peace.

Historically, the theories of Absolute Advantages (and Comparative Advantages, see the next section) were developed in the context of free trade and capitalist market-economies. In principle, however, the arguments in favour of an increased division of labour are independent of the economic systems. Also economies of the Soviet type could realise important material gains by an increased international division of labour. This was in principle acknowledged by the Soviet and East European governments. In 1949 they

[6] Donald Winch, *Malthus*, Oxford University Press, 1987, p. 67.

formed the Council for Mutual Economic Aid (COMECON) with the explicit aim to develop their division of labour. In practice, however, the East European countries had substantially lower shares of exports and imports than Western countries on similar levels. This was partly due to the slow and cumbersome negotiation mechanisms within the COMECON. These countries were, however, also burdened by a systematic handicap in this respect: Their leading parties stuck to the principle that they should steer their economies with detailed *national* planning and command mechanisms. A detailed *national* planning and steering and a high degree of *international* division of labour are, however, incompatible. International division of labour means per definition less national steering, means less national sovereignty. The detailed national steering mechanisms worked systematically as a brake against an enlargement of the international division of labour. This was one factor, among others, which contributed to the demise of these systems.

Ricardo and "This Deepest and Most Beautiful Result in all of Economics"

As we have seen, most economists followed Smith and agreed that a country could realise important material gains if it concentrated on those products where it had "an advantage". But what happens if one country is better at both products? If one country is simply more productive than the other, practically through the whole range of products? This question has been intensely debated the last 200 years. Most economists have answered the question in a positive way: Even if one country is generally more productive, it is advantageous to engage in trade and division of labour. This answer relies mostly upon the theory of Comparative Advantages.

The outline of the theory was presumably first presented in 1815, during the debates about the Corn Laws, by Robert Torrens, an ex-officer who turned economist, in his *Essay on the External Corn Trade*[7]. It was, however, David Ricardo who in 1817 in his famous *On the Principles of Political Economy and Taxation*, presented an elaborate

[7] Jacob Viner, *Studies in the Theory of International Trade*, Clifton 1975 (first published 1937), p. 441f.

formulation of the theory, placed it in an appropriate general setting and gave due emphasis to it[8]. Therefor, it is usually Ricardo who is credited for it.

Ricardo used some arithmetic illustrations, discussing the productivity of Great Britain and Portugal as to wine and textiles. We present here some different numerical models. The reason for this unfaithfulness towards Ricardo is, on the one hand, the wish to present the problems as simple as possible, and in a way parallel to the tables 1-4. Furthermore, in Ricardo's illustrations Portugal was the more productive country. We transform Great Britain into being the more productive country; this corresponds better to the economic reality of Ricardo's and our times.

Let us suppose the following matrix of production per worker per day:

	Textile	Wine
Great Britain	10	5
Portugal	2	4

Table 5: The matrix of production per worker, per day. Also consumption pattern, supposed there is no foreign trade, and one worker is engaged in each sector.

If we again suppose that both countries have a labour force of two workers each, this table also shows the pattern of consumption. At this stage we suppose there is no specialisation and no foreign trade, and half the work force is employed in textiles and wine respectively, in both countries. According to Ricardo's and Torrens' argumentation, also in this case specialisation and foreign trade can be advantageous. But before we proceed, we have to introduce wages and prices.

Let us assume that British workers receive a wage of £ 1 per day, and Portuguese workers 1 Escudo. We further assume that wages are the only factor, which determines prices. Of

[8] *The Works and Correspondence of David Ricardo*, edited by Piero Sraffa, with the Collaboration of M. H. Dobb. Volume I, *On the Principles of Political Economy and Taxation*, Cambridge University Press, 1951, p. 134-6.

course, in real life the prices also contain profit, costs for raw materials, for machinery and depreciation, and the like. We can leave all those outside and concentrate on wages only. The inclusion of other cost factors will only complicate matters, without altering the substance of the argument. Furthermore, by focusing on wages, we have singled out the most important price factor. Finally, by regarding wages only, our models roughly correspond to Ricardo's labour theory of value, according to which prices "in principle" are proportional to the labour inputs. So at this point we are faithful to him again, admittedly in a somewhat naïve way (the labour theory of value, as already Ricardo observed, leads into very complex, not to say: daunting problems).

If we now leave all these "buts" and "ifs" behind us, then we can calculate the prices in a straightforward way: A British worker gets £ 1 a day, and in one day he (she) produces 10 units of textiles. That means the wage costs are £ 0,1 per unit, and consequently, the price is £ 0,1. In Portugal, a worker gets 1 Escudo, and he (she) produces 2 units of textile. So, the price is 0,5 Escudos. If we calculate all the prices this way, the following matrix appears:

	Textile	Wine
Great Britain	£ 0,10	£ 0,20
Portugal	0,50 Escudos	0,25 Escudos

Table 6: The prices of the commodities, based on the assumption of wages of £ 1/1 Escudo per worker per day, and the productivities as depicted in table 5.

Now we can calculate the potential effects of specialisation and foreign trade. How could this specialisation realistically come about? We can assume that the British see possibilities on the Portuguese market. British merchants sail to Lisbon and sell textiles. In order to penetrate the market, they have to undercut the Portuguese prices, so they sell cheaper than 0,5 Escudos per piece, say: 0,4 Escudos. The money they earn they can use to buy Portuguese wine. They offer higher prices for wine; say, they pay 0,4 Escudos per barrel. So, they sell textile for 0,4 Escudos and buy wine for 0,4 Escudos per unit. In fact,

the British exchange 1 piece of British textile for 1 barrel of Portuguese wine. This exchange rate between units of British textile and Portuguese wine is called the *Terms of Trades*. Here lies one of the central problems, we discuss that below. At this point, we simply assume a "fair rate" of 1:1.

In the model above, the British textile exports drive Portuguese producers out of the market, but wine production becomes stimulated. In the end, both Portuguese workers engage in viticulture, the production rises from 4 to 8 barrels. This, however, does not imply that Great Britain also concentrates all her production in one sector. As we shall see, the different productivities and the restrictions of mutual demand have the effect that Great Britain can continue with wine-production. British wine production falls from 5 to 4 units, and she moves only "0,2 workers" from viticulture to textile manufacture. We receive the following production matrix, after specialisation:

	Textile	Wine
Great Britain	12	4
Portugal	-	8

Table 7: Production after specialisation, 1. example. Portugal engages 2 workers in viticulture, Great Britain 1,2 workers in textile manufacture and 0,8 in wine-production.

With prices as assumed above, we receive the following trade pattern: Great Britain sells 2 units of textile to Portugal and earns 0,8 Escudos (2 x 0,4 Escudos). Great Britain buys for that amount 2 wine barrels (2 x 04, Escudos). We notice *en passant*, the balance of payments is in equilibrium for both countries. In fact, the model is constructed in a way that this condition is fulfilled, in order not let balance of payment problems confuse the argumentation.

If production and trade are modelled this way, we receive a new consumption pattern. Great Britain has produced 12 textile units and exported 2 of them; this leaves 10 units for British consumption. As regards wine, Britain has produced 4 barrels and imported 2.

So, the British can consume 6 barrels. If the Portuguese consumption is computed in the analogous way, as production minus export plus import, the following matrix appears.

	Textile	Wine
Great Britain	10	6
Portugal	2	6

Table 8: Consumption after specialisation and "fair trade".

If we compare this consumption pattern with the situation prior to specialisation and trade, we see the following gains:

	Textiles	Wines
Great Britain	+/-0	+ 1
Portugal	+/-0	+ 2

Table 9: The gains from free trade, "fair trade" supposed.

There are only gains and no losses, and both countries profit from it. In this case the benefits for Portugal are even greater than the British ones. So, also when two countries at different levels of productivity begin to trade, the results are positive, in this case it makes sense to concentrate the resources on the production where the country has got a *Comparative Advantage*. As to wine production, Portugal is inferior to Britain in absolute terms, but she has a comparative advantage on this, compared to textile production in Portugal. This way, Torrens and Ricardo obtained "this deepest and most beautiful result in all of economics"[9]

However, if we have a closer look at the tables above, two problems appear for the weaker country, i. e. Portugal: Portugal had to concentrate *all* her work force in viticulture, in the model she moved a "whole" worker from textile to wine production.

[9] Ronald Findlay, 'Comparative Advantage', John Eatwell, Murray Milgate, Peter Newman (eds.), *The New Palgrave. A Dictionary of Economics*, vol. 1, London and Basingstoke, 1987, p. 514-517, esp. p. 514.

But Great Britain moved only "0,2" workers. That means that Portugal had to carry a much higher burden of adaptation, for Great Britain it was comparatively easy. Seen from a Portuguese point of view: Were two barrels of wine worth this profound transformation? In fact, Portugal received economic gains only if the gains from trade were bigger than the adaptation costs. It is perhaps one of the greatest omissions in many books written in the economic main stream that the costs of adaptation are often completely neglected.

As a rule of thumb, adaptation is much easier for the higher developed countries. At best, adaptation happens inside well-run firms: The management follows the development on the market closely and alters the production correspondingly. No problem. But in the worst case, people loose the basis for their existence. This is typically the case for more primitive forms of agriculture, if the crop people depended on, fell in price. Another example is the closing down of a mine when the prices of ore or coal cannot support the production any more. Both cases are frequent in countries of the Third World. So, poorer countries have usually to adapt more, and their adaptation is usually much more costly for them than for the rich world. The well-run companies, which adapt smoothly, are mostly located in the rich world. That's why this part of the world is rich.

The simple model above also shows that the positive results crucially depend upon the condition that *complete* adaptation, however costly, is possible. Let us suppose that something impedes that the Portuguese labour force concentrates completely on wine production. It is, for instance, conceivable that there is no more soil for vineyards. We can also assume that producing wine requires much experience and skill that the textile workers do not have. In this case, the main effect of the British trade offensive is the ruin of the Portuguese textile industry, with mass poverty and destruction as a consequence, and least for quite some time. Many historical experiences seem to have followed this pattern. In e.g. the Germany of the 1840s, the handloom weavers were slowly driven into ruin by cheap British cotton imports. That Germany "in principle" had a comparative advantage as to e.g. coal and steel, can explain Germany's successful industrialisation

later, but that did not help the hand-loom weavers. China and India have experienced many dreadful experiences of this kind, and currently Russia does so.

Furthermore, back to the model, "Portugal" is now completely dependent upon the export of one product, she is now a "wine monoculture", whereas Great Britain contains both a strong textile industry and a substantial wine production. If something happens that disturbs foreign trade, let it be strikes in the British industry, or war, or whatever, then Portugal is in severe trouble. By comparison, if e.g. an invasion of malign insects destroys the Portuguese wine production, and thereby the deliveries to Britain, then the British problems are much less severe because there are still many British producers left. Many Third-World countries ended in conditions similar to "Portugal" in the model: Ghana became heavily dependent on Cacao, the Ivory Coast on coffee, Zambia on copper exports, and Cuba on sugar cane. Those countries have regularly come into severe problems when the prices of their one commodity fell. And the prices of commodities such as coffee or copper have usually shown a much higher volatility than the prices of manufactured products[10].

This shows us that the characteristics of the products in question are not irrelevant. Some products can be sold on growing markets, with huge future possibilities. Those are usually highly sophisticated manufactured products, currently for instance devices in the fields of information technology or biotechnology. But other products have their future behind them; their markets are almost stagnant or even declining. This is the case with many agricultural products or metals. But the logic of Comparative Advantages can drive (and actually have driven) many underdeveloped countries into a production pattern where they have specialised on the "wrong" products, here understood as products to be sold on stagnant markets.

[10] *The Economist* (2nd January 1999, p. 92) informs: "The metal index has fallen by 45% from its peak in January 1995. A sustained recovery in metal prices is unlikely without cuts in output. Copper is at a 12-year low, and nickel at an 11-year low." According to a chart, in the one year between December 30th 1997 and December 29th 1998, Sugar prices fell by about 37 per cent, Nickel by 35, coffee by 20 and copper by about 18 per cent (ibid.).

So, even on the assumption on "fare trade", the "Portuguese" have reasons to consider the matter carefully before they follow the logic of Comparative Advantages. In the light of these considerations, if taken the amount of necessary adaptation, the problems of dependency and the danger of "wrong" specialisation into consideration, it is easy understandable that historically the enthusiasm for free trade has been most widespread in the highly-developed countries, such as Great Britain in the 19th century, by then the economically leading country in the world.

There is, however, also a shadow upon the beauty of fair trade in the rich countries: If we assume stable Terms of Trade" of 1 unit of textile to 1 barrel of Portuguese wine, we must conclude that the division between the British and the Portuguese market will disappear. Trade will result in one big "world market" with uniform prices. If we follow the models above: We assumed that the British merchants sold textiles for 0,4 Escudos per unit, and bought 4 barrels of wine for 0,4 Escudos per unit. Not let us suppose an exchange rate of £ 1 : 2,5 Escudos (we discuss the problem of exchange rates below). If we abstract from transport costs, the British prices must also change. The prices of textiles in Britain will rise from £ 0,1 to £ 0,16, but wine will fall from 0,2 pounds to 0,16 pounds. So, in the end, the prices are equalised in Britain too. Otherwise, if e.g. wine in Britain is still more expensive than a unit of textile, if a barrel costs, let's say £ 0,18, then Portuguese wine will still be cheaper on the British market. Portuguese wine, to repeat, costs 0,4 Escudos, that is £ 0,16, so British wine still cannot compete against Portuguese wine, unless the British producers lower their prices to £ 0,16. So, "fair trade" will result in the following price matrix:

	Textiles	Wine
Great Britain	£ 0,16	£ 0,16
Portugal	0, 4 Escudos	0,4 Escudos

Table 10: The uniform prices under the condition of "fair trade".

Here our models exhibit a small inconsistency: Above we supposed that the Portuguese could at most export 4 wine barrels to England, they produce at full capacity. This would

always leave a kind of niche for British producers, so they could keep prices up. If we, however, enlarge our simple two-country model with more countries and add more "Portugals", then this inconsistency disappears, then there is no safe niche for British wine producers, they have to lower their price level to the world market level (i.e. £ 0,16).

This way, the market mechanism will create one price system for both countries. This, however, produces severe effects on the income distribution. Above we presumed that wages were the only cost factor. Conversely, the income generated by the sales was used to pay wages, and wages only. Again, the following argument will not alter substantially if we add other kinds of income, such as profits for capitalists. This means in turn that the wages in English viticulture have to be lowered considerable. If a barrel of English wine can be sold for £ 0,16, and if - as supposed above - one worker can produce 5 barrels per day, then his salary can only be £ 0,8 (=5 x £ 0,16). Before the introduction of free trade, the wage was £ 1 a day; so, the wine producer has to accept a wage reduction of a fifth.

On the other hand, the textile workers can be happy. Their wages augmented by a third, from £ 1 to £ 1,6. So, the international trade has produced a remarkable income spread: Before, everyone got £ 1, now one group gets double as much as the other. Certainly, we cannot expect the British wine producers to be enthusiastic about free trade. At this point a convinced free-trader will argue that this wage spread is positive. It makes people move from the wine yards to the textile manufactures. And if the remaining wine producers are unsatisfied with their income, they should change profession too. This argument is basically correct. It must, however, be emphasised that labour mobility in general is low. People seldom move because of wage differentials, so inequalities as the ones mentioned above will remain for a very long time. Usually, only if people get unemployed, only if their jobs are properly destroyed, do people move. In the model above, the free trade result was that "0,2" workers in the British viticulture became unemployed and had to move to "Manchester", where the textile manufactures are located. A liberal economist can argue that this was only beneficial for the person in question, his/her salary rose from £ 1 a day before to £ 1,6. But given the point that becoming unemployed and moving to

"Manchester" implies heavy economic and non-economic costs (such as loosing your friends and acquaintances), their enthusiasm is presumably low too.

So, the wine producers have good reasons to resist free trade. The simplest way to prevent the entry of cheap Portuguese wine is, of course, the introduction of a high tariff. And not surprisingly, historically European "wine" producers have a long history of successfully demanding tariffs of this kind. They thereby not only prevent their own incomes from falling, they also prevent the incomes of "Portuguese" wine producers *and of "English" textile producers* from rising. Tariff policy is a kind of class struggle. In England in 1815 the "wine" producers won, in 1846 the textile producers were victorious (when the Corn Laws become abolished). Today, the European Union still maintains one of the highest tariffs against agricultural imports in the world.

The argument, which has been used most to placate angry "English" wine producers, has been the following: In the models above, "Britain" experienced a general rise in income. Before, 2 workers earned £ 1 each, which gives an aggregated income of £ 2. Now, after free trade, the general income has risen from £ 2 to £ 2,56 (1,2 worker x £ 1,6 + 0,8 workers x £ 0,8). "On average", the British have turned richer. Many liberal economists have pointed out that the gains were so great that the losers could be *compensated*. The first one to argue on this line was presumably John Stuart Mill, in an article about "The Corn Laws" in the *Westminster Review*, in April 1825: For "every pound which finds it way into the pockets of the landlords, in consequence of the Corn Laws, the community is robbed of several. It would be better to have a repeal of the Corn Laws, even clogged by compensation, than not to have it at all: ... no one could complain of a change, by which, though an enormous amount of evil would be prevented, no one would lose." [11]

The possibility of compensation exists. In the numerical example above, one might conceive a tax system which transfers money from the textile workers to the remaining wine producers. If the aggregate British income becomes divided equally, the result will be a uniform income of £ 1,28. To bring this result about, the textile workers must accept

[11] As quoted by Unwin, op. cit., p. 183.

that £ 0,32 of their income will be taxed away (20 per cent), to be transferred to the wine producers. Even after taxation, the incomes in the textile industry are considerably higher than before we enter free trade (1,26 instead of £ 1), so from this point of view, the operation is feasible. It is, however, an open question whether transfers of this magnitude are politically feasible. Even in welfare states with a heavy tax burden economic losers, e.g. unemployed, get a compensation only for a part of their losses. So, the often-quoted compensation-argument sounds a bit hollow. We can conclude, even in the case of compensations, that there will be net losers from free trade, even in rich countries such as "Britain", at least in the short run.

The compensation argument contains one important truth: Only if a welfare state distributes gains and losses to some extent, can the advocates of free trade expect to gain and *maintain* broad popular support. Otherwise, there will be large sections of the population who with good reasons resist open borders. It is no coincidence: Today in e.g. the Scandinavian countries or the Netherlands, practically no one advocates a protectionist policy. But in the US, which as to social policy must be regarded as an underdeveloped country, protectionism is quite substantial, see for instance Pat Buchanan's campaign for presidency[12].

The problem of losers and of growing inequalities is, of course even more acute in the weaker countries. In our models above this problem was "solved" for "Portugal" by the simple fact that we mercilessly drove all the population engaged in textile production to the wine regions. We simply assumed complete adaptation. Indeed, if we transform a society so massively, *this* problem, new inequality generated by trade, does not exist. As argued above, to assume such a smooth and complete adaptation is hardly a realistic assumption, and the results of "incomplete adaptation" can be, and have been, outright horrible.

[12] Patrick Buchanan has recently published a book (*The Great Betrayal*, Little Brown). The *Economist* assures us: "The content of Mr. Buchanan's prose is largely nonsense." (*The Economist*, September 12th - 18th 1998, *The Economist Review*, p. 10). The paper is presumably perfectly right. The interesting problem is, however, why politicians who utter nonsense can gain influence. The *Economist* is a high-quality paper, but it often polemises against welfare state arrangements, which, usually, no matter how comprehensive they are, are deemed as being "excessive". But by attacking welfare state arrangements the paper actually attacks one of the conditions for free trade, a principle the paper otherwise whole-heartedly supports.

On the other hand, *if* adaptation works, under the condition of "fair trade" the incomes in the poor countries rise considerably. In the models above: With a productivity of four barrels a day, a wine price of 0,4 Escudos means an income of 1,6 Escudos a day: 60 per cent more than before, an increase poor people really can feel.

The Terms of Trade and the Effects of Economic Aggressiveness

The matter turns much worse, from a "Portuguese" point of view, if we suppose different terms of trade. Above we assumed that the British merchants sold their textiles on the Portuguese market for 0,4 Escudos, and bought wine for 0,4 Escudos per barrel. This is the same as to say: The British gave 1 textile unit and received 1 barrel of wine. Now we alter this assumption: The trade is strictly carried out on the basis of the Portuguese prices, as they were before the British came (see table 6): 0,5 Escudos per textile unit and 0,25 Escudos per wine barrel.

Trading on the basis of Portuguese prices sounds fair for Portugal, but it is actually not. We still assume that Great Britain has increased her textile production from 10 to 12 units. Also in this case the British can export 2 textile units to Portugal. But now they earn 1 Escudo (2 x 0,5 Escudos). With this 1 Escudo they can buy 4 barrels of wine (4 x 0,25 Escudos).

If we now look at the consumption possibilities, as the result of own production minus export plus import, a new pattern emerges which diverges considerably from the one in table 8:

	Textile	Wine
Great Britain	10	8
Portugal	2	4

Table 11: Consumption after specialisation and trading with Portuguese prices.

If we compare this consumption with the situation before specialisation (table 5), the following matrix of the gains from foreign trade appears:

	Textile	Wine
Great Britain	+/- 0	+ 4
Portugal	+/- 0	+/-0

Table 12: The gains from foreign trade, trading with Portuguese prices.

As we can see, in this case all the benefits ended on the British side. For Portugal the result was plus/minus zero as to both products. In fact, we have to conclude that the whole operation was detrimental for Portugal: Again she had to undergo a profound and costly process of adaptation, but had no gains from it. Taken the adaptation costs into consideration, she incurred heavy net losses. Perhaps the experiences of countries such as China, whose harbours in 1842 were opened by the British by the use of military force (not a liberal way of introducing liberalism), fit to this model.

Furthermore, in the model above, "Portugal" is again completely dependent upon one export product, and she might have undergone a process of "wrong" specialisation. We must conclude that the logic of Ricardo's assumptions shows that free trade is *not* beneficial under all circumstances.

This "worst-case-scenario" for Portugal was the outcome of the assumption that the trade was done on the basis of the old Portuguese prices, 0,5 Escudos per textile unit and 0,25 Escudos per wine barrel. This is logically equivalent to saying that 1 unit of textile is worth 2 wine barrels. So, the British could exchange 1 unit of British textiles for 2 barrels of Portuguese wine. But in the "fair trade" example above, 1 British textile unit was exchanged for 1 wine barrel: The Terms of Trade have deteriorated enormously for the Portuguese side.

"Unfair Trade" will exacerbate the problem of income distribution within "Great Britain". This becomes apparent when we consider exchange rates and the effects on the

British price system, after the cheap Portuguese wine will be dumped upon the British market. We suppose the British textile manufactures to be the aggressive part. They successfully penetrate the Portuguese market and sell their textile to the former Portuguese price of 0,5 Escudos. In Great Britain a piece of textile costs £ 0,1. This implies an exchange rate of £ 1: 5 Escudos. As in table 6, the British buy the Portuguese wine at a price of 0,25 Escudos, or £ 0,05. The Portuguese wine barrels are thereafter sold on the British market. If the British wine producers want to stay in the market, they have to lower their prices from £ 0,2 to this level of 0,05 (plus transportation costs, of course). In other words, they have to reduce their prices (and their wages) down to a quarter of the previous level. In this perspective, the Portuguese and the British wine producers have a common interest in combating unfair trade.

Ricardo's model opens, however, also for an outcome where Portugal receives all the gains. This will be the result, if the British prices are used, or, which is the same, if 2 units of British textiles will be exchanged for 1 barrel of wine. This presupposes a pattern of production as sketched below.

	Textiles	Wine
Great Britain	18	1
Portugal	-	8

Table 13: Specialised production after a successful Portuguese penetration of the British wine market.

The Portuguese have specialised completely on wine, and they have driven the British producers out of the market, as far as they could. Their capacity is, however, not big enough to supply the British market completely, there are a few British vineyards left. The Portuguese sell 4 wine barrels in Great Britain and earn £ 0,8 (£ 0,2 x 4). With these £ 0,8 they buy 8 textile units (£ 0,1 x 8). This produces a consumption patter as follows:

	Textiles	Wine
Great Britain	10	5
Portugal	8	4

Table 14: Consumption after specialisation and trade with British prices.

This time all the material gains from trade ended on the Portuguese side:

	Textiles	Wine
Great Britain	+/- 0	+/- 0
Portugal	+ 6	+/- 0

Table 15: The material gains from specialisation, after trading with British prices.

This outcome is, of course, much more favourable for the Portuguese than the one before. But even in this case, it is the Portuguese who have to adapt most, and still it is the Portuguese who become completely dependent on one export article. But the British have to adapt more than in the case before and shift 0,8 workers, not only 0,2, to textile production. And their viticulture is now almost extinct, with only 0,2 workers left there (compared to 0,8 workers previously).

As the examples of "fair trade" and of the cases using Portuguese or British prices show, the Terms of Trade are of crucial importance as to the question, how the gains from trade will be distributed. Which factors determine them? It is, as a matter of fact, a question, which has occupied generations of economists. It is in this respect interesting to notice that many standard textbooks, written in a liberal bend, simply jump over this problem. For instance, David Begg, Stanley Fischer and Rudiger Dornbusch confine themselves to the proposition that the "world economy" gains; obviously, they regard the problem how

the gains are distributed, as being of minor relevance.[13] An exception is e.g. the well-written and stimulating textbook by Ernest Kay Hunt and Howard J. Sherman[14].

Within the logic of Ricardian models, the Terms of Trade must lie within an interval whose borders are marked by the relative productivities, and thus the price ratios *inside* the countries in question. In the models above, if we trade with British prices, the exchange rate is 1 textile : 0,5 wine; trading with Portuguese prices implies a ratio of 1 textile : 2 wine. So, the Terms of Trade must be:

1 British textile unit : [o,5 - 2] barrels of Portuguese wine .

But where does it fall inside this interval? The standard answer within main stream economy is: International prices, and thus the Terms of Trade, are determined by "international supply and demand". This is certainly true, but it does not explain too much, unless it is specified what determines supply, and in particular demand. Furthermore, the argumentation with international supply and demand might induce readers to perceive these factors as being beyond the control of the actors in question, consequently, the Terms of Trade might be perceived as something determined by the outside, something which has to be accepted. The logic of Ricardo's model points, however, in a different direction. This becomes apparent if we formulate the problem of the Terms of Trade as the - logically equivalent - problem: Do they trade with "British" or with "Portuguese" prices. This the actors can influence.

How can we realistically model situations where the trade is done on the basis of "Portuguese" prices (which, to remember, favour the British)? The assumptions for such a situation are not too far-fetched: Let us depict a situation where British merchants sail to Lisbon and offer British textiles. The price for textiles in Portugal were (see table 6) 0,5 Escudos per unit. In order to enter the market, the British offer textiles for 0,4 Escudos. At the same time they pay wine prices higher than usual. This stimulates the

[13] David Begg, Stanley Fischer, Rudiger Dornbusch, *Economics*. Fourth edition, Maidenhead, Birkshire, 1994, p. 582.

wine production, and this is exactly the mechanism that brings the Portuguese adaptation about. If this process has been going on sufficiently long enough, then all Portuguese textile manufactures are driven out of the market. At this point in time the British can raise the prices for their textiles, there are no Portuguese competitors any more. It would, however, not be advisable to raise them too much, i.e. above the previous Portuguese price level because this could encourage Portuguese production again. So, a successful British trade offensive on the Portuguese market will result in a foreign trade where the *previous* Portugal price pattern is reproduced (and the entire benefit ends on the British side).

But as we saw above, an outcome of this kind is not the only possibility. Now let us suppose that the Portuguese were the faster and more aggressive ones: Foreign trade begins by Portuguese merchants sailing to London and offering cheap Portuguese wine, say, for £ 0,15 per barrel, thereby undercutting British prices by 50 per cent. After having driven a sufficient number of British producers out of the wine market (and into textile production), the Portuguese can raise their prices to the previous British level of £ 0,2 level. So, trade will be done on the basis of British prices.

In this perspective, it is the more aggressive one, the one who actively penetrates the market of the other, who reaps the benefits of international trade. In principle, this can be the Portuguese as well as the British. And certainly, one conclusion holds: If you cannot avoid foreign trade, then you are well advised to be active and aggressive. Just standing at the beach and watch the British ships coming, is tantamount to disaster.

In this context it is perhaps illustrating to think of the historical experiences of China and Japan. China at first tried to prevent foreign economic penetration, and then after 1842 basically endured it. But the Japanese after 1855, when US war ships under Commodore Matthew Perry forced the Japanese to open their harbours, quickly embarked upon an active economic strategy. The remarkably different results in the economic development

[14] Hunt, Ernest Kay and Sherman, Howard J., *Economics. An Introduction to Traditional and Radical Views*, Sixth Edition, New York, 1990, p. 616-618.

of these two countries can perhaps to quite some extent ascribed to the these different patterns of reaction.

As we said above, in principle the "Portuguese" can be as aggressive as the "British". But, alas, it seems as if the British have the better cards on hand as regards aggressiveness: A successful penetration of foreign markets requires competence in trading, information, and economic reserves, factors which are more likely to privilege the economically stronger side. In principle, the ships can be hired, but it is much easier if you own already the ships. In 1842 the British had suitable ships, the Chinese had not.

Many, presumably most economists will argue that the case of "Portuguese" prices is an exception. In most realistic cases the common price level will lie somewhere in the middle between the Portuguese and British prices. It is, however, a question how exceptional this exception has been in history. If the present writer is right in his presumption that 19th-century China (and perhaps also 19th-century India) have undergone this experience, then this "exception" affected indeed large groups of human beings for quite some time.

Exchange Rates and Wages

It follows from the assumptions above that the exchange rates must lie within a certain interval, if there is to be foreign trade at all. If foreign trade is to be started, two propositions must hold:

1) British textiles must be cheaper than Portuguese ones; otherwise the British cannot export their products to Portugal. So, in numerical form, the following unequation must be respected:

£ 0,1 < 0,5 Escudos, or £ 1 < 5 Escudos

2) Portuguese wine must be cheaper than British one; otherwise the Portuguese cannot export wine to Great Britain. In numerical terms:

£ 0,2 > 0,25 Escudos, or £ 1 > 1,25 Escudos.

If we put these unequations together, it follows that the exchange rate for £ 1 must lie within the interval of [1,25; 5] Escudos. If the pound is too strong, say to rate of 6 Escudos, then the British textiles cannot compete with the Portuguese ones. If, on the other hand, the Escudo rises to a rate of 1 pound, the Portuguese wine turns too expensive; it cannot be exported to Britain. This is, however, only valid on the basic starting assumptions. If we e.g. introduce inflation processes and, say, double the Portuguese wages, then the whole interval of possible exchange rates changes doubles, and so does the "fair trade rate". The changing of monetary aggregates has no direct influence on the dynamics of Comparative Advantages. This "neutrality" of monetary aggregates is a general feature of classical economics.

Under the above-mentioned conditions, the exchange rate reflects the Terms of Trade, or whether the trade is fair or not. We calculated above that the "fair trade", where 1 unit of British textiles gets exchanged for 1 barrel of Portuguese wine, implies an exchange rate of £ 1 : 2,5 Escudos. The very unfair trade at Portuguese relative prices (1 textile unit = 2 wine barrels) implies an exchange rate of 1 : 5.

We saw above that the "fair trade" implied an exchange rate of £ 1 : 2,5 Escudos. Furthermore, the British wages were 1,6 and £ 0,8. Under the conditions of "fair trade" the Portuguese wine producers have experienced a substantial increase of income. They sell the wine for 0,4 Escudos. Given a productivity of 4 barrels a day, this means 1,6 Escudos per day, as compared to 1 Escudo previously. Calculated in pounds, they earn £ 0,64. a day. As we saw above, under the condition of fair trade, a British wine producer earns £ 0,8, a British textile worker £ 1,6. The incomes thereby reflect exactly the productivities: British wine producers produce 5 barrels a day, in contrast to 4 in Portugal. And calculated in money terms, a British textile worker is double as productive as a British wine producer.

If wages are in proportion to productivity, that only sounds fair. One has, however, to be aware of the fact that "productivity" is also a function of "fair" or "unfair" trade. Let us again examine the case where the British penetrate the Portuguese market, so that trade is

done on the basis of Portuguese prices, which implies an exchange rate of 1:5. As we saw above, under the condition of "unfair" trade, the British wine prices fall to £ 0,05. This leaves an income of only £ 0,25. The Portuguese wine producers earn 1 Escudo, or £ 0,2, so their wage is again at a level of 80 per cent of the British wine producers'. As is the productivity. The wage relation between British and Portuguese wine producers is not altered. They produce the same product, and changes of prices do not alter the relation of productivities within the same field of production. But if we compare the relation between textile and wine producers in Britain, the wine producers earn only a quarter of what can be earned in the textile industry. This also reflects "productivity": A British textile worker produces textiles worth £ 1 a day, so his productivity is £ 1 a day, whereas in British viticulture, productivity is only £ 0,25 a day (5 barrels à £ 0,05), or one quarter of the productivity in textile. But under conditions of "fair" trade, productivity and income differed only as 2:1. So, "unfair" trade, by changing the prices, also changed the price relation between textile and wine, and thereby the relation of productivity between those sectors. Production and productivity must be measured in relative prices, and if we change them, we change the relation of productivity. Under "fair" trade, a British textile worker earned 2,5 times as much as a Portuguese wine producers (£ 1,6 to 1,6 Escudos, at an exchange rate of 1 : 2,5). Under "unfair" trade, the wage in the English textile industry is five times higher than in Portuguese viticulture.

Summary

All in all, the model of Comparative Advantages is a powerful set of arguments for free trade. There are, however, many spots on the beauty: There are situations conceivable where the Terms of Trades are so unfavourable for the weaker side that all the benefits end on the rich side. Taken the costs of adaptation into consideration, this means disaster for "Portugal". Furthermore, trade, which is beneficial for both sides, presupposes a smooth and complete adaptation. Every kind of problem that impedes adaptation, or slows it down significantly, can have disastrous consequences.

The Terms of Trade must lie within an interval whose borders are given by the relative prices inside the countries in question. And although it is difficult to determine the

reasons for the location of the Terms of Trades within the possible interval, it seems as if economic aggressiveness, the will and ability to penetrate a foreign market plays a key role. The aggressive one shapes the Terms of Trade in his favour.

Fair trade is beneficial for the rich country, but it creates an uneven distribution of income. The inequality inside the rich country increases, the more unfair the trade is. Potential losers in the rich countries, and the people of the poor countries, have a common interest in making the trade as fair as possible. In theory, the losers in the rich countries can be compensated. But the transfers necessary for a complete compensation are so huge that it is not likely that they are realistic from a political point of view. But at least partial compensation seems to be a necessary condition for free trade. So, free trade presupposes a welfare state. Economic liberalism and the welfare state are complementary.

If there is no welfare state (or an insufficient one), free trade unavoidably mobilises the "wine" producers in "Great Britain" for the demand of tariffs. Tariffs are a kind of class struggle of the British wine producers against the Portuguese wine producers and the British textile manufacturers.

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